

### **Remarks**

Allowance of all claims are respectfully requested. Claims 1-9, 12-21, 24-33 & 36 remain pending.

Applicants note that the prior received Notice of Allowance has been vacated for this application. Since the Issue Fee for this application responsive to the prior issued Notice of Allowance was filed with the United States Patent Office on May 11, 2004, Applicants hereby request that the Issue Fee be credited to their Deposit Account No. 09-0463 (IBM).

Applicants gratefully acknowledge the continued indication of allowability of claims 4-9, 12, 16-21, 24, 28-33 & 36 if rewritten into independent form, including all the limitations of the base claim and any intervening claims. In response, claims 12, 24 & 36 are rewritten into independent form, including all the limitations of the base claim and any intervening claims. These claims are therefore believed to be in condition for allowance. Claims 4-9, 16-21 & 28-33 have not been rewritten into independent form since the amended independent claims 1, 13 & 25, from which they ultimately depend are believed to be in condition for allowance for the reasons stated below.

Independent claims 1, 13 & 25 are amended herein to include, in part, the subject matter of dependent claims 10, 11, 22, 23, 34 & 35, and thus, these dependent claims are canceled without prejudice. Further, each independent claims clarifies that the group connectivity messages are repeatedly sent from the group leader to the identified nodes of the at least one group of nodes. Support for this amendment can be found throughout the application as filed, including specification pages 20 & 21 and the state diagram of FIG. 7. No new matter is believed added to the application by any amendment presented.

Substantively, prior claims 1-3, 10, 11, 13-15, 22, 23, 25-27, 34 & 35 were rejected under 35 U.S.C. §102(e) as being anticipated by Crawley (U.S. Patent No. 6,321,270). This rejection is respectfully traversed to any extent deemed applicable to the amended claims presented herewith.

In one aspect, Applicants' invention comprises a technique for topology propagation in a distributed computing environment (e.g., claims 1, 13 & 25). This technique includes repeatedly

sending group connectivity messages from at least one group leader to identified nodes of at least one group of nodes within a distributed computing environment, and discontinuing the sending of group connectivity messages during a time period of no topology change within the distributed computing environment. Thereafter, the technique includes reinitiating the repeated sending of group connectivity messages from the at least one group leader upon identification of a topology change within the computing environment. The discontinuing includes for each group leader discontinuing the sending of group connectivity messages when the number of messages sent from the group leader to the identified nodes of the at least one group of nodes reaches a set limit after identification of a topology change within the computing environment, wherein the set limit is greater than one. Further, the technique implements the sending, the discontinuing, and the reinitiating without employing acknowledgement messages during the topology propagation.

In Applicants' claimed invention, the distributed environment is assumed to comprise an unreliable computing environment in that messages may be lost during transmission. The technique accomplishes the topology propagation within this environment without using acknowledgement messages to perform the sending of the group connectivity messages, the discontinuing of the sending, or the reinitiating of the sending.

With respect to the anticipation rejection, it is well settled that there is no anticipation of a claim unless a single prior art reference discloses: (1) all the same elements of the claimed invention; (2) found in the same situation as the claimed invention; (3) united in the same way as the claimed invention; and (4) in order to perform an identical function as the claimed invention. In this instance, Crawley fails to disclose various aspects of Applicants' invention as recited in the amended independent claims presented, and as a result, does not anticipate (or even render obvious) Applicants' invention.

Crawley discloses a system for controlling a multicast session in a network having multiple network nodes. The system selects one of the network nodes as a control point associated with the multicast session. Identity of the control point is then advertised to all network nodes in a particular area. The control point determines multicast control information for the multicast session. Multicast control information determined by the control point is transmitted to the network nodes participating in the multicast session. The multicast control

information may include network nodes participating in the multicast session, multicast reflection points, or instructions for transmitting multicast data to members of the multicast session. Updating of the multicast control information occurs in response to network changes. The system may provide a secondary control point that maintains a copy of control information associated with the multicast session. (See Abstract.)

Initially, Applicants respectfully submit that Crawley does not teach or suggest their recited technique for propagating topology information in a distributed computing environment wherein the sending of group connectivity messages from at least one group leader to identified nodes of the group of nodes, the discontinuing of the sending of group connectivity messages during the time period of node topology change, and the reinitiating of sending of the group connectivity messages from the at least one group leader, all occur without employing acknowledgment messages during the topology propagation. A careful reading of Crawley fails to uncover any discussion of the multicast control information being transmitted to the network nodes participating the multicast session without the nodes providing an acknowledgement of receipt of that information. Crawley is simply silent as to this aspect of the information exchange. Applicants respectfully submit that one of ordinary skill in the art would read Crawley as employing at some level the conventional approach of requiring acknowledgment from the receiving node of a message sent from the control point.

With respect to the above-noted subject matter, i.e., the subject matter of original dependent claims 11, 23 & 35, the Office Action alleges at page 4: "Crawley discloses that no acknowledgment messages are sent during or as a result of sending data or when the data is interrupted or reinitiated (see FIG. 3)." This conclusion is respectfully traversed. A careful reading of FIG. 3 of Crawley fails to uncover any express discussion that the processing set forth therein is accomplished without the use of acknowledgement messages. Since the patent does not expressly teach such a concept, Applicants respectfully submit that one of ordinary skill in the art would have understood the patent to rely on conventional use of acknowledgement messages, and that these messages would simply comprise under-the-cover mechanisms not expressly discussed by the Crawley patent, but rather, assumed. Since the conventional art is to employ acknowledgment messages in response to receipt of a message, and since there is no express teaching in Crawley that the noted processing thereof is accomplished without the use of

acknowledgment messages, Applicants respectfully traverse the conclusions set forth at page 4 of the Office Action, and request reconsideration thereof.

Further, within the above-noted environment, Applicants' independent claims recite that the discontinuing of the sending of the group connectivity messages from the at least one group leader occurs when a number of messages sent from the at least one group leader to the identified nodes of the group reaches a set limit after identification of a topology change within the computing environment, wherein the set limit is greater than one. A careful reading of Crawley fails to uncover any discussion that the control point therein broadcasts multiple times the multicast control information for the multicast session to each of the network nodes. To the extent relevant to this aspect of Applicants' claimed technique, the Office Action references relative to original dependent claims 10, 22 & 34 that the limitation is already discussed in the rejection of claim 1. Applicants respectfully traverse this conclusion to any extent deemed applicable to the claims presented herein wherein the group connectivity messages are repeatedly sent from the at least one group leader to the identified nodes of the at least one group of nodes until the number of messages sent from the group leader reaches the set limit after identification of the topology change.

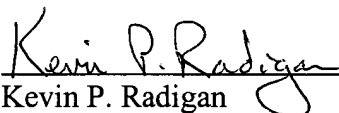
Since Crawley does not address the problem of the present invention, i.e., how to propagate messages in an unreliable computing environment without the use of acknowledgments to the sending of the group connectivity messages, Applicants respectfully submit that there would have been no suggestion or teaching therein of the processes set forth by Applicants in the amended independent claims 1, 13 & 25.

For all the above reasons, Applicants respectfully request reconsideration and withdrawal of the anticipation rejection to independent claims 1, 13 & 25. The dependent claims are believed allowable for the same reasons as their respective independent claims, as well as for their own additional characterizations. In this regard, Applicants respectfully traverse the characterization in the Office Action that the subject matter of claims 2, 14 & 16 is taught or suggested by Crawley. A careful reading of Col. 1, lines 54-66 (cited in the Office Action), fails to uncover any discussion of a heartbeat protocol, *per se*, let alone the use of a heartbeat protocol within each group of the at least two networks to ensure continued presence of each identified

node within the group, as recited by Applicants in the dependent claims at issue. Thus, reconsideration and withdrawal of the rejection based thereon is respectfully requested.

All claims are believed to be in condition for allowance and such action is respectfully requested. However, Applicants' undersigned attorney is available should the Examiner wish to discuss this application further.

Respectfully submitted,

  
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